

INSTALLATION

Nikon®
Coolscan™
Installation
Guide

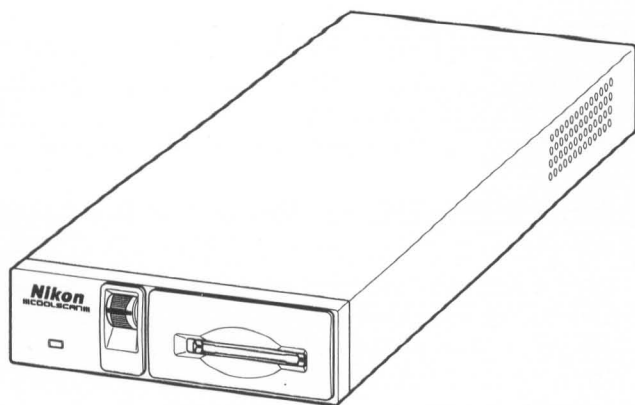
for
Windows™

Nikon®
ELECTRONIC IMAGING

Nikon

Coolscan™ Installation Guide

for the Windows™ Operating System



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This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.

Installation Safety Regulation of Coolscan Internal Model

This scanner has been approved by the Underwriters Laboratories, Inc., in the U.S., the Canadian Standards Association, and as a class B device under Part 15 of the FCC (Federal Communications Commission) Rules. This unit should only be installed in equipment that has been approved according to the same standards.

AC Line Cord

Note that different power cords are needed for different line voltage. If the line voltage is greater than 125V AC, the plug should be rated for 250V AC and 15A (NEMA 6P-15), this cord insulation should be at least STV type, and the gauge of the cord should be at least AWG 18. If the line voltage is 125V AC or less, the plug should be rated for 125V AC and 10A with SVT type resistance for the cord insulation and a gauge of at least AWG 18, and the cord should meet the safety standards of the country where the unit is used.

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Acknowledgments

Nikon acknowledges with gratitude the contributions of the Design, Planning and Production Sections of the Electronic Image Engineering Division of Nikon Corp. and the Marketing & Development Group at Nikon Electronic Imaging. Nikon Electronic Imaging would also like to thank all those who helped test Coolscan and its software.

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Introduction

Thank you for purchasing the Nikon Coolscan™ 35mm Film Scanner, and welcome to our family of electronic imaging products. We are confident that Coolscan will meet and exceed the high standard of quality, reliability, innovative design, and ease of use which you have come to expect from Nikon.

Before proceeding, make sure that you have read the *Open Me First* documents enclosed with Coolscan, including a Packing List and important operator safety precautions.

Before You Begin

The installation procedures for Coolscan are straightforward. The instructions provided in this manual will lead you through these procedures and have you scanning within an hour. However, if you are not comfortable mounting hardware into your computer, please contact a qualified service person to assist in the installation of your scanner.

There are two models of Coolscan. The first is the *LS-10 Internal* model, which is mounted into your computer just like a floppy disk drive. The other is the *LS-10E External* model, which is a peripheral device and cannot be mounted into your computer. As you follow the installation procedures in this guide, refer only to the sections which are appropriate to the Coolscan model you have purchased. In this guide, the Coolscan *internal* model will always be referred to as “LS-10.” The Coolscan *external* model will always be referred to as “LS-10E,” in which the “E” designates “external.” If you are uncertain of which model you are installing, refer to the sticker on the base of the scanner, which will indicate either “LS-10” or “LS-10E.”

About this Manual

The function of this manual is to provide both the novice and expert user with information to successfully install Coolscan. A complete description of scanner hardware installation and scanner software installation is provided.



Very important informational items are printed in boldfaced type with a triangular alert icon located in the margin.

Following is a summary of the contents of this manual:

Chapter One – Introduction • (this chapter) Provides an overview of the Coolscan documentation package, product registration information, system requirements, and information on backing up the software.

Chapter Two – Setting Up Coolscan • Describes how to set up the scanner, where to place the scanner, transporting the scanner, and safety notes regarding the usage and installation of the scanner.

Chapter Three – The SCSI Interface • Describes the SCSI Interface, including setting up the SCSI ID, terminating the SCSI bus, how to connect to the computer SCSI bus, the SCSI chain, and a general description of the pro's and con's of the SCSI bus.

Chapter Four – Mounting the LS-10 • **This chapter is for installing the Coolscan internal model only. Proceed to Chapter Five if you are installing an LS-10E model.** It details how to mount the scanner into the computer.

Chapter Five – Software Installation • Provides procedures for installing the scanner software. Included are the steps necessary to copy the software from the distribution diskette provided onto the hard drive.

Troubleshooting • Solutions to problems you may encounter in installing your Coolscan.

Unpacking

Again, if you have not done so already, **please review the *Open Me First* documents enclosed with your Coolscan before proceeding in this manual.**

Welcome back!

By this point you have:

1. Removed all packaging materials from the scanner and the interface kit.
2. Confirmed that you have received all the parts that you were supposed to by using the packing Check List.
3. Checked for damage to the scanner caused by shipping. If you noticed any damage, you have notified the authorized Nikon reseller from whom you purchased the scanner.
4. Saved all shipping and packaging materials in case you need to ship the scanner in the future.

Registration

Completing and returning the enclosed Product Warranty Registration Card is very important to you. It is the only way that we can ensure that you promptly receive the latest information and software updates from Nikon. We feel that it is so important that we are offering an added incentive – upon receipt of your completed card, we will send you Nikon's *Guide to Scanning*, free of charge! This is an invaluable comprehensive manual on scanning and color reproduction. So, please complete the Product Warranty Registration Card and mail it today!

Software Backups

As is the practice with any software, it is strongly advised that you make a complete backup of the enclosed distribution software diskette and store the original master diskette in a safe place. Always work with the backup copies when installing the Nikon software.

Minimum PC System Requirements

As an absolute minimum, your PC or compatible computer system must be configured with the following components:

- Microsoft Windows version 3.0 or later (version 3.1 recommended)
- 8 Megabytes of RAM (16-32 recommended for best performance)
- 80 Megabyte Hard Disk (300MB or more recommended)
- Sufficient hard disk space for the Nikon Scanner plug-in, Coolscan Control software, SCSI Driver, and resulting image files
- 8-bit display (24-bit true-color display *strongly* recommended)

Suggested System Configurations

Following these suggestions will yield the best scanning results:

- Coolscan is not guaranteed to operate with all third-party SCSI controller cards. It is for this reason that Nikon has supplied you with a Nikon-approved SCSI controller card for the installation of your scanner.
- For the most pleasing display, set your monitor to display the maximum number

of colors available. Thousands or millions of colors will provide an excellent display of your image. If your system only supports a maximum of 256 colors you will see a 'dithered' image, which looks 'soft.' The monitor setting has no effect on the actual quality of your image, which is always captured in 24-bit mode (16.7 million colors).

- Color images occupy large amounts of disk space. So make sure your hard disk has sufficient free space to store the images you plan to scan. You should have at least 60 megabytes of free space available if you plan on maximum resolution scans.

Setting Up Coolscan

This chapter will introduce you to the main components of the LS-10 and LS-10E models, proper placement of the LS-10E, safely transporting your scanner, and precautions for safe operation.

The Front Panel

Let's take a look at Coolscan's front panel, as shown in Figure 2.1. The uncomplicated design of the front panel is indicative of how simple Coolscan is to use. Note that the front panel of the LS-10 and LS-10E is identical. The front panel consists of the *film slot*, *focus wheel*, and *power/busy/error indicator light*.

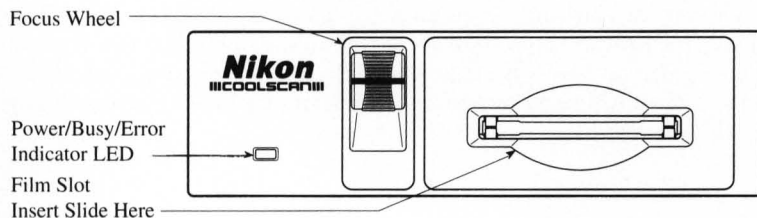


Figure 2.1 Coolscan's front panel.

Film Slot

The *film slot* is the opening into which you insert your slides or film strips (using the enclosed film strip holder) for scanning. Slides and film strips are likewise ejected from the film slot.

A high degree of care must be exercised with the film slot. Since this opening allows the film to enter the scanner, it thus provides access to its delicate instrumentation.



Never insert any object into the film slot, other than mounted film or the provided film strip holder. Flammable materials, metals, water, etc., will cause fire, electrical shock and damage to the unit.

Focus Wheel

The *focus wheel* is used to fine-focus during scanning operation. This control is provided because of the wide variety of film and film mounts available, which affect the focusing function of the scanner.

The focus wheel must be in its center position during power up. The center position is indicated by the black line across the focus wheel being centered in the visible portion of the focus wheel.

Power/Busy/Error Indicator Light

The green *power/busy/error indicator light* has several functions. First, during power-up it blinks at one-second intervals until Coolscan's power-on self-test and auto-calibration has completed. Second, after the self-test and autocalibration is complete, the light stays on constantly, indicating that Coolscan is ready to scan. Third, during scanning, the light will blink at two-second intervals, indicating that the scanning operation is in progress. Lastly, the light will blink rapidly if an error is detected, in which case the scanner will either recover on its own, or may have to be powered off and back on to effect a reset.

To summarize:

Power-up: LED blinks at 1 second intervals

Coolscan is ready: LED is on constantly

Coolscan is scanning: LED blinks at 2 second intervals

Error condition: LED blinks rapidly

If you are installing an LS-10 model, please proceed to the section "The Rear Panel - LS-10."

The Rear Panel – LS-10E

The rear panel of the LS-10E is shown in Figure 2.2. Note that there are five items of interest on the rear panel. These are the *AC power switch*, *AC power connector*, the two *SCSI connectors*, the *SCSI termination power switch*, and the *SCSI ID switch*.

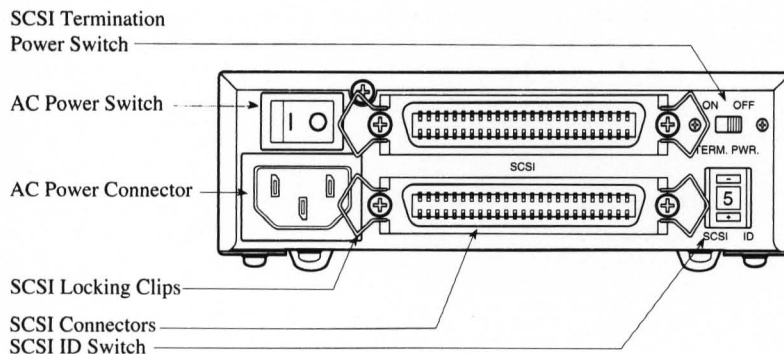


Figure 2.2 Coolscan's rear panel - LS-10E.

The *AC power switch* and *AC power connector* should be familiar to you. The AC power switch is used to turn power to the scanner on and off. The AC power connector receives the female end of the AC power cord.

The three SCSI-related items on the rear panel will be explained in detail in the next chapter, "The SCSI Interface."

Please proceed to the section "Orientation and Placement of the LS-10E."

The Rear Panel – LS-10

The rear panel of the LS-10 is shown in Figure 2.3. Note that there are three items of interest on the rear panel. These are the *DC power connector*, *SCSI connector*, and *configuration DIP switch*.

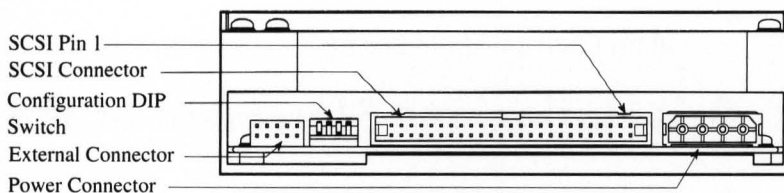


Figure 2.3 Coolscan's rear panel - LS-10.

The *configuration DIP switch* is shown in Figure 2.3. In almost all cases, the factory default settings of these switches will be proper for your installation. The default settings for the configuration DIP switch block are shown in Table 2.1.

The significance of the SCSI connector, DC power connector, and the configuration DIP switch is discussed in greater detail in Chapter 3, "The SCSI Interface." For now, note that the scanner is set at the factory to SCSI ID #5 and to termination OFF. Disregard the *external connector* at the bottom-left side of Figure 2.3. This connector is not used when installing the LS-10.

DIP Switch	Default	Usage
1 (Down)	On	SCSI ID bit 0 = 1
2 (Up)	Off	SCSI ID bit 1 = 0
3 (Down)	On	SCSI ID bit 2 = 1
4 (Up)	Off	SCSI Termination = Off

Table 2.1 Factory default settings for configuration DIP switch block.

Both sides of the LS-10 are identical. Note the set of two tapped holes on each side, called *mounting holes*, as shown in Figure 2.4. One set of mounting holes on each side of the scanner will be used for the internal guide rails. This procedure will be explained in detail in Chapter 4.

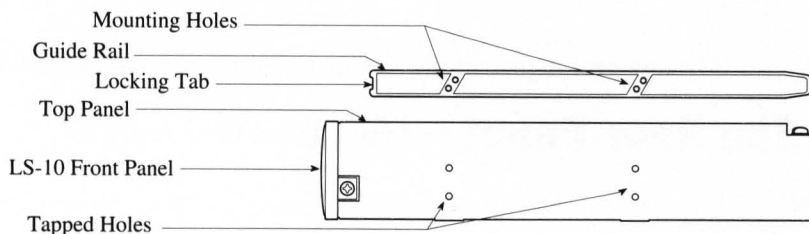


Figure 2.4 LS-10 - side view, with guide rails.

Please proceed to the section "Transporting Coolscan."

Orientation and Placement of the LS-10E

Proper Orientation

The following guidelines and precautions should be adhered to when deciding on orientation of your LS-10E.

Let's take a look at Coolscan, as shown in Figure 2.5. Although Coolscan can be oriented on either of its sides, it is strongly recommended that you orient Coolscan on

its base, or feet, to ensure that it won't fall down. In this orientation, the "Nikon Coolscan" label on the front panel will read properly.

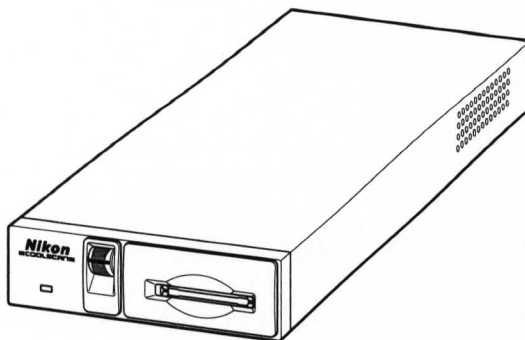


Figure 2.5 LS-10E, properly oriented.

Proper Placement

The following guidelines and precautions should be adhered to when deciding on placement of your LS-10E:

1. Place Coolscan near the computer so that the maximum suggested SCSI cable length (6 feet) is not exceeded.
2. Place the scanner so that it is easy to reach.
3. Coolscan should be placed on a flat, stable surface, free from vibration.
4. Keep the scanner away from damaging liquids by locating it away from sinks, coffee pots, etc.
5. Protect Coolscan from dampness, high humidity, and excessive dust or smoke. Dust and smoke in particular can cause undesirable effects on the scanner's optical systems, requiring extensive cleaning and maintenance to correct.
6. Avoid locations where a sudden change in temperature might cause condensation inside the scanner.
7. Protect the front of the scanner from direct sunlight or bright lights.

8. Avoid places with extremely hot or cold temperatures (below 10 degrees Celsius or above 35 degrees Celsius).
9. Avoid placing Coolscan near heat sources.
10. Avoid any physical shocks to the scanner. Do not store the unit where it will be subject to vibration.
11. Avoid placing Coolscan too close to other peripherals, and make sure there is sufficient air circulation on all sides of the scanner.

Transporting Coolscan

The following guidelines and precautions should be adhered to when transporting your Coolscan:

1. Always use the original packaging materials.
2. If the original packaging materials are unavailable, use appropriate packaging materials for precision instruments. If you are shipping your Coolscan back to Nikon, Nikon will not be responsible for damages incurred due to improper packaging.
3. The focus wheel must be turned all the way downward to the end of its travel before shipping.
4. Pay special attention to the air or courier service to ensure that they can properly handle this precision instrument.

If you are installing an LS-10, please proceed to the section "General Safety Precautions."

Connecting AC Power to the LS-10E

The scanner's AC power cord is a standard three-wire grounding plug. This plug will fit only a grounded AC outlet. Intended to be a safety feature, *the grounding connector should not be defeated*. Additionally, an electronic surge protector is highly recommended.

Safety Precautions When Connecting AC Power to the LS-10E

The following precautions should be complied with when connecting AC power to the scanner:

1. Always use a proper power source of 100 to 240V AC, 50 to 60 Hz.
2. Do not hold the cord itself when plugging or unplugging the AC power. Hold the plastic portion of the connector itself rather than pulling on the cord.
3. If you lose the supplied power cord, use an appropriate replacement that is subject to the voltage of the power source, using the following guidelines:
 - If 110V-250V AC power is used, make sure that the plug is rated at 250V AC, 15A (NEMA 6P-16).
 - If a 100-110V AC power source is used, the plug must be rated at 120V AC, 10A.
 - The gauge of the cord must be at least 18 gauge (remember, the smaller the gauge, the thicker the wire. For example, 18 gauge is thicker than 20 gauge).
 - The cord must be approved by the safety regulations of the country where it is used.
 - A properly grounded three-conductor AC power source is required in order to reduce electrical noise and the possibility of electrical shock.

AC Power Safety Precautions – LS-10E

The following safety guidelines should be adhered to concerning AC power and Coolscan:

1. Once the AC power source is turned off, either through the Coolscan power switch or other AC power switch, wait at least 5 seconds before powering on again to ensure the proper power up sequence.
2. Don't unplug the AC power cord from the AC source or from the Coolscan AC power connector while the Coolscan AC power switch is on. To be completely safe, don't unplug any other peripheral while Coolscan is powered on.
3. Do not move Coolscan while its power is on.

4. Never disassemble the scanner. It is very dangerous to touch the devices inside the unit due to high voltages, and there are no user serviceable parts inside. Such action may be a violation of your Nikon Limited Warranty, and would render the warranty null and void.

General Safety Precautions

Always power off Coolscan and/or remove the power cord from the AC source when any one of the following occurs:

1. The AC power cord (LS-10E only) or 4-pin DC power plug (LS-10 only) becomes damaged.
2. Any liquids are spilled into the scanner.
3. The scanner is exposed to excessive moisture.
4. The housing of the scanner has become damaged (LS-10E only).
5. The housing is opened (LS-10E only).
6. You suspect the scanner is not functioning properly.
7. If something unusual occurs, such as abnormal noise, odor, or smoke. In this case, bring your Coolscan to the dealer where it was purchased or to an authorized Nikon repair facility.
8. Do not attempt to insert slide mounts into Coolscan that are over 3mm thick. Remount the film into an appropriate holder.
9. Do not attempt to insert slide mounts into Coolscan that are not flat. Remount the film into an appropriate holder.
10. Do not force a slide or the film strip holder into the Coolscan film slot. A smooth gliding action should be used during both insertion and removal.
11. Do not attempt to remove or reposition the slide or film strip holder in the Coolscan film slot during the scanning process.

Installation Precautions

The following guidelines should be observed when installing Coolscan:

1. Make certain that power to all instruments directly connected to Coolscan (via SCSI) is turned off before beginning the installation. This includes the AC power switch on Coolscan (LS-10E only).

If you are installing an LS-10, there is no AC power switch since it relies on the PC's power. Therefore, make sure that the PC's power is off.

2. Turn off the power to all peripherals connected to the computer (display, printer, etc.).

3. If your PC has a key-lock facility, turn the key to the unlock position.

4. Unplug the AC power cable to the PC.

5. When mounting Coolscan into the PC (LS-10 only), be especially mindful to eliminate electrostatic discharge, as it can damage the scanner.



Electrostatic discharge will damage the scanner if you touch its SCSI connector pins. Do *not* touch the pins.

The SCSI Interface

The computer interface used exclusively with Coolscan is called a Small Computer System Interface (SCSI – pronounced ‘scuzzy’). This interface has been adopted as a standard in the PC computing environment and is utilized by many computer devices, including disk drives, scanners, printers and CD-ROM drives.

System Requirements for SCSI Installation

In order to connect a SCSI device to a PC or compatible, the following requirements must be met:

1. The computer system must have a SCSI controller card (A Nikon-tested card has been provided with Coolscan).
2. The SCSI device must be set to an unused SCSI ID number.
3. A proper SCSI cable must connect the SCSI controller to the SCSI device.
4. The SCSI bus cabling must be correct if more than one device shares the bus.
5. The SCSI bus must be properly terminated.
6. Appropriate SCSI driver software must be used.

These requirements will be addressed in the following sections.

Setting the SCSI ID

The SCSI bus is a sort of ‘data highway,’ with the SCSI devices connected to the SCSI bus representing ‘stops’ on this highway. Each device requires its own distinct SCSI ID number so that the PC can easily locate it through the SCSI controller card. Because the SCSI bus can accommodate up to eight devices, internal or external, a SCSI ID number can have a value between 0 and 7. There are no implicit regulations regarding the allocation of these numbers. Typically, however, the PC’s SCSI controller card would be assigned SCSI ID number 7, while the SCSI devices would utilize numbers 0 through 6.

The SCSI ID number is commonly set by a switch on the rear of the SCSI device.

The default SCSI ID number of Coolscan, set at the factory, is ID #5.

Determining Which SCSI ID Number to Use

If Coolscan is the only SCSI device that will sit on the SCSI bus, there is no need to change the SCSI ID number from the factory setting.

If Coolscan must share the SCSI bus with one or more other SCSI devices, it is necessary to ensure that no two devices are using the same SCSI ID number. Create a list of all SCSI devices (See Table 3.1) on the SCSI bus of the PC you will be installing Coolscan on, noting the device type and the SCSI ID number of each device. To determine the SCSI ID number of the devices, look at the rear of each for some indication. If there is no indication as to the SCSI ID number, then consult with the device's users manual or contact the device's manufacturer to ascertain this information.



Never change the SCSI ID number of a SCSI device while its power or the computer's power is on.

<u>SCSI ID</u>	<u>Device Type</u>
0	<u>Internal Disk Drive</u>
1	_____
2	_____
3	_____
4	_____
5	<u>Coolscan Scanner (default)</u>
6	_____
7	<u>SCSI Host Adapter Card</u>

Table 3.1 Typical SCSI ID number chart.

If another SCSI device shares the same SCSI ID #5 of Coolscan, change the SCSI ID number of Coolscan to an unused number between 0 and 6, as described in the following sections. Note any changes in Table 3.1.

If you are installing an LS-10, please proceed to the section "Setting the SCSI ID – LS-10."

Setting the SCSI ID – LS-10E

If necessary, the SCSI ID number of the LS-10E can be set via a switch on the back of the scanner, as shown in Figure 3.1. Simply push the button *above* the SCSI ID number indicator to *decrement* the SCSI ID number. Conversely, push the *lower* button to *increment* the SCSI ID number.

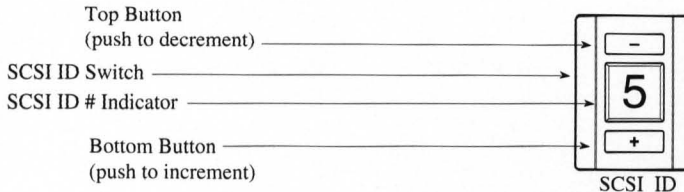


Figure 3.1 SCSI ID switch on the rear of Coolscan - LS-10E.

Please proceed to the section “Terminating the SCSI Chain.”

Setting the SCSI ID – LS-10

If necessary, the SCSI ID number of the LS-10 can be set via the block of configuration DIP switches on the back of the scanner, as shown in Figure 3.2. For most installations, these configuration DIP switches will not require changing.

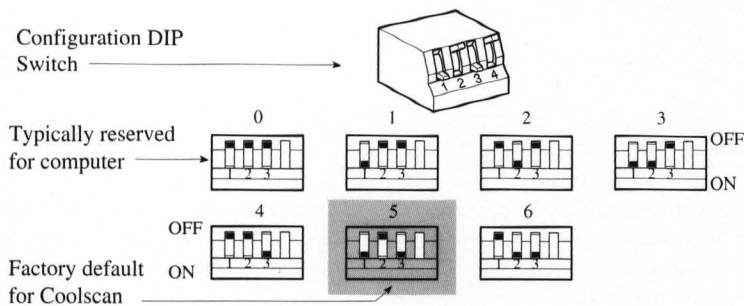


Figure 3.2 Configuration DIP switch block on the rear of Coolscan - LS-10.

To change the positions of the configuration DIP switches to the desired SCSI ID number, use Table 3.2 for proper switch positions. Use a small pointed instrument to toggle the switches, such as a very small screwdriver. It is not recommended to use a pencil or pen, since these will discolor the switch and make it hard to differentiate the ON versus OFF position.

DIP Switch Configuration

	<u>SCSI ID</u>	<u>DIP #1</u>	<u>DIP #2</u>	<u>DIP #3</u>
	0	Off	Off	Off
	1	On	Off	Off
	2	Off	On	Off
	3	On	On	Off
	4	Off	Off	On
<u>Default ID</u>	5	<u>On</u>	<u>Off</u>	<u>On</u>
	6	Off	On	On

Table 3.2 Configuration DIP switch values for corresponding SCSI ID number. SCSI ID #5 indicates factory default setting.

Terminating the SCSI Chain

The *SCSI chain* is the electrical bus connecting two or more SCSI devices. It is critical that this bus be correctly terminated for the SCSI devices to operate properly.

Termination is an electronics term that applies to the impedance found at both ends of the bus. The electrical signals on the SCSI bus are changing rapidly between their digital 'on' and 'off' states. To minimize electrical 'noise,' a *terminator* is placed on each end of the SCSI bus. The effects of this termination may be unseen to you, but are critical nonetheless.



Incorrect SCSI termination can cause unpredictable errors.

Typically, the PC sits at one end of the SCSI bus. Assuming this is the case, the SCSI controller card in the PC must be terminated.

If one other SCSI device shares this SCSI bus, it also must be terminated. If additional SCSI devices sit on the bus in between the two end SCSI devices, these devices *cannot* be terminated. *The SCSI chain will only operate properly if termination is in place at the beginning and end of the SCSI bus.*

Improperly terminated SCSI devices can immediately cause errors or may work correctly for a period of time before generating their first errors.

If you are installing an LS-10, please proceed to the section "Terminating the LS-10."

Terminating the LS-10E

The LS-10E is configured with two 50-pin SCSI connectors on the rear of the unit, as shown in Figure 3.3. Install the standard 50-pin SCSI terminator included with Coolsan, onto the bottom connector if termination is desired. If you would like Coolsan to reside in the center of the SCSI chain, then by necessity, the bottom connector will be used for a SCSI to SCSI jumper cable.

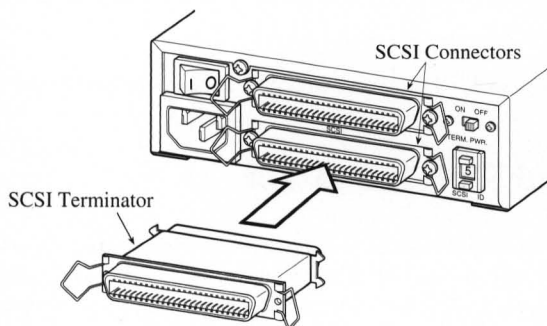


Figure 3.3 Attaching the SCSI terminator on the rear of Coolsan - LS-10E.

Please proceed to the section "SCSI Cables."

Terminating the LS-10

Setting termination on the LS-10 is simple. Termination is controlled by the position of the #4 switch of the configuration DIP switch block. If you recall, setting the SCSI ID number required use of only the #1, #2, and #3 switches.

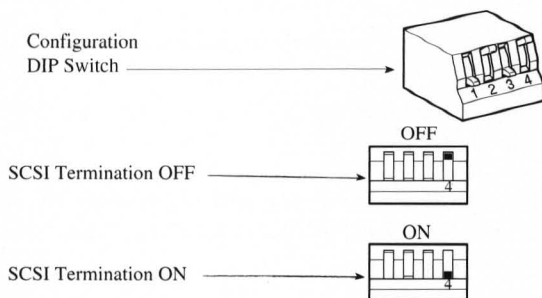


Figure 3.4 SCSI termination using the configuration DIP switch #4 on the rear of the LS-10.

If switch #4 is in the ON position, Coolscan is internally terminated. If switch #4 is in the OFF position (the factory default setting), Coolscan is *not* internally terminated. These two settings are shown in Figure 3.4 above.

SCSI Cables

There are three basic types of SCSI cables that can be used with Coolscan. These are all 50 conductor cables, i.e. they have 50 *contacts*, or 'pins.' These three cables are described below.

If you are installing an LS-10, please proceed to the section "SCSI Cables Used With the LS-10."

SCSI Cables Used With the LS-10E

Two different types of SCSI connectors exist on PC computers. The first is a 25-pin DB25 type connector, and the second is a *Centronics 50-pin* type connector. The SCSI cable provided with your Coolscan *External* model has one of each type connector on opposite ends, as shown in Figure 3.5a. This cable is used for the default configuration of Coolscan, which is making the scanner the last device on the SCSI bus.

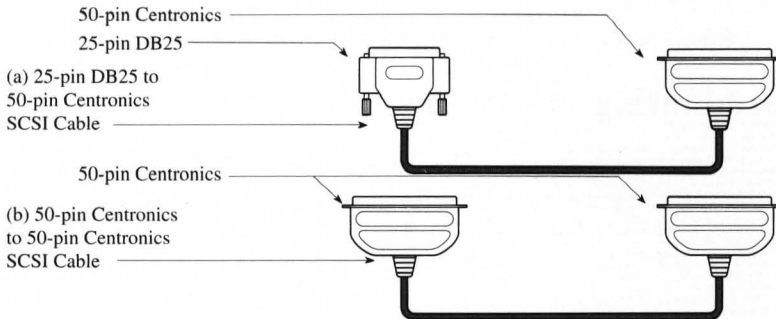


Figure 3.5 SCSI external cables. a) The 25-pin DB-25 to Centronics 50-pin cable. (b) The Centronics 50-pin to Centronics 50-pin cable.

If you plan on placing Coolscan in the middle of the SCSI chain you will need a Centronics 50-pin to Centronics 50-pin SCSI cable, as shown in Figure 3.5b. This cable is *not* supplied with Coolscan.



SCSI cables should never be connected or disconnected while the SCSI device or the computer is powered on. Such action can damage the SCSI controller card.

Please proceed to the section **The PC's External SCSI Connector.**

SCSI Cables Used With the LS-10

The SCSI flat cable provided with the LS-10 enables you to connect the scanner to the PC's SCSI chain as either the only device on the SCSI bus, or as an additional device. This is a *chainable SCSI flat cable* with two identical crimped connectors on each end and one connector crimped in the center, as seen in Figure 3.6a.

If Coolscan is to be the last SCSI device in the SCSI chain: Connect one end of this cable to the existing SCSI bus in the PC (connecting the SCSI cable to the PC's SCSI bus will be explained in the next section), then connect the opposite end to the SCSI connector on the rear of Coolscan (refer to Figure 2.3 to locate the SCSI connector). The center connector is not used. Make sure that DIP switch #4 is in the termination ON position, as indicated in Figure 3.4.

If Coolscan is to be connected in the middle of the SCSI chain: Connect one end of this cable to the existing SCSI bus (connecting the SCSI cable to the PC's SCSI bus will be explained in the next section), connect the center connector to the SCSI connector on the rear of Coolscan, and connect the last connector to your internal disk drive.

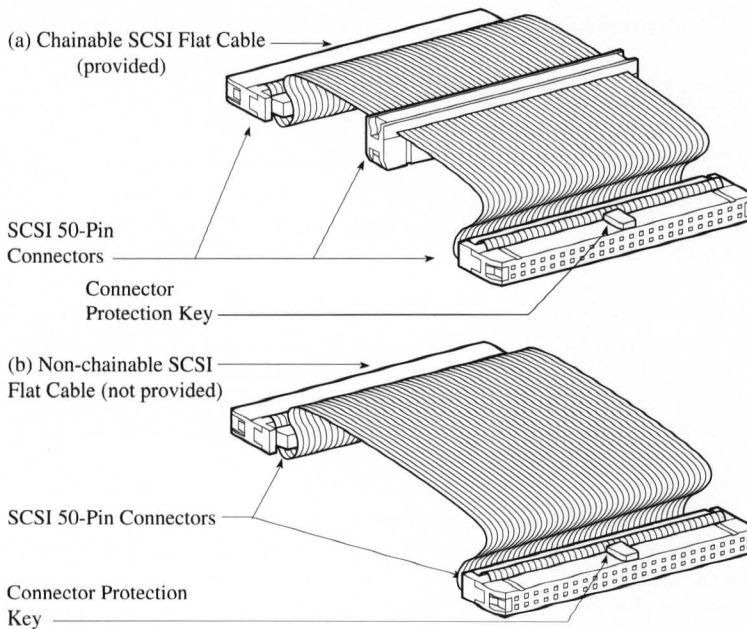


Figure 3.6 SCSI flat cables. (a) Chainable SCSI flat cable provided with Coolscan. (b) Non-chainable SCSI flat cable.

The cable seen in Figure 3.6b is a *non-chainable SCSI flat cable*. If you already have one of these, it can be used instead of the supplied cable when you are installing Coolscan as the last device in the SCSI chain.



SCSI cables should never be connected or disconnected while the SCSI device or the computer is powered on. Such action can damage the SCSI controller card.

Please proceed to the section “The PC’s Internal SCSI Connector.”

The PC’s External SCSI Connector

There are two typical SCSI connectors found on PC computers. The first is the 25-pin DB25 connector, shown in Figure 3.7a. It is a female connector and is similar to the printer port connector. This is the connector provided on the included SCSI controller card. This is why a *25-pin DB25 to 50-pin Centronics* cable has been provided with your Coolscan. The 25-pin end of the cable is connected to the SCSI controller card’s connector on the PC, and the 50-pin end to Coolscan.

Make sure not to confuse the printer port connectors on the computer with the 25-pin DB25 SCSI connector, should this type of connector be used.

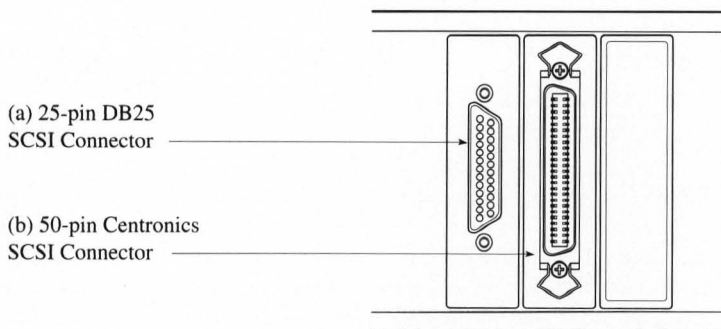


Figure 3.7 Typical SCSI connectors on the rear of the computer. (a) DB25 connector. (b) 50-pin Centronics connector.

The second type of SCSI connector found on PCs is the 50-pin Centronics connector, which is commonly used for external SCSI connections. This connector is shown in Figure 3.7b. If your PC already has installed a SCSI controller card with a 50-pin Centronics external connector, you will not be able to use the SCSI cable provided with Coolsan. Instead, you will need a 50-pin Centronics to 50-pin Centronics SCSI cable.

Please proceed to the section “The SCSI Chain.”

The PC's Internal SCSI Connector

The SCSI connector for internal SCSI devices on the PC is a 50-pin flat connector residing on the SCSI controller card. Please note that Coolsan will not operate properly unless it is connected to the SCSI controller card. Do not connect Coolsan to any SCSI *accelerator card* that may be installed.

Connecting to the Internal SCSI Connector

Again, the SCSI connector on the PC's SCSI controller card is a 50-pin flat connector as shown in Figure 3.8. Note the position of pin 1 and the *safety key*. The safety key provides a level of protection against inserting the improperly.

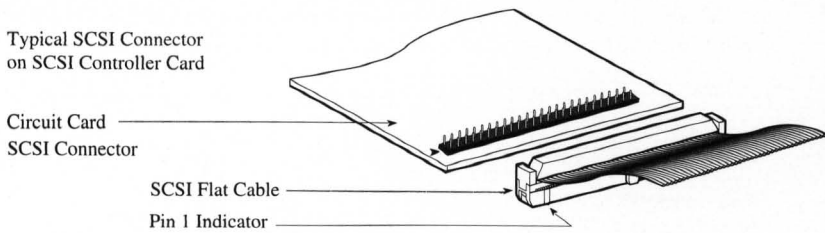


Figure 3.8 The 50-pin flat SCSI connector inside the PC on the SCSI controller card.

The standard PC internal SCSI connector (the male connector) has mechanical side levers to assist in inserting and removing the mating connector. Note that this connector is similar to the one on the back of Coolscan, as shown in Figure 2.2. If for some reason you choose not to use the internal SCSI cable provided with your Coolscan, note that there is a wide variety of 50-pin flat SCSI connectors and SCSI cables. They are all functionally the same, yet vary in some important ways:

1. Some cables might not have a safety key. In this case, take extra precautions to ensure that the mating cables' connectors are properly aligned prior to insertion.
2. Some connectors may not have Pin 1 clearly marked on the connector.
3. Some cables may have Pin 1 on the cable indicated in red.
4. Some connectors will not have mechanical side levers to assist in plugging and unplugging the cable.

Care must be exercised when inserting and removing these 50-pin connectors, shown in Figure 3.9, as they are rather fragile. Observe the following guidelines when handling these connectors:

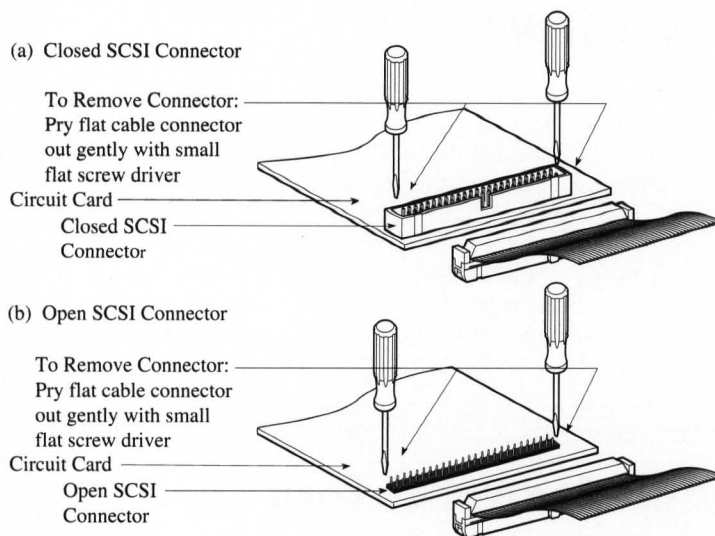


Figure 3.9 Removing the SCSI cable from the SCSI connector on the SCSI card. (a) Closed-type SCSI connector. (b) Open-type SCSI connector.

1. Never force the connector in or out. If you bend or break any pins, replacement of the controller card will be required.
2. Make sure that the mating connectors are aligned properly before inserting. Take extra care in this very critical step.
3. Push the cable connector gently into the mating connector. Once in place, push down firmly.



Never remove a cable from the connector by pulling on the cable. If you cannot remove the cable by hand, use a small screwdriver to pry each of the sides out, a little at a time. Use caution at all times.

4. To remove the cable, gently pull the cable out by the connector the rest of the way.
5. Make sure that Pin 1 of the cable connector mates with Pin 1 of the computer connector. Never guess.
6. *Never* plug or unplug a SCSI connector while the computer is powered on. This can result in damage to the SCSI interface hardware.

The SCSI Chain

The SCSI chain, as you learned earlier, is the electronic data and control bus that connects two or more SCSI devices. The SCSI bus is the 'data highway' and the SCSI devices linked together forming the SCSI chain represent 'stops' on the highway. As mentioned at the start of this chapter, the SCSI chain can accommodate up to eight devices on the SCSI bus.

On any SCSI bus, there must be at least one *SCSI host* and one *SCSI target* device. Coolscan is always a SCSI target device. This is the standard configuration for SCSI-based scanners. In fact, most devices connected to computers will be SCSI targets. Typically, the PC will always be the SCSI host.

In each case, the SCSI ID number of each device must be unique.

The SCSI Controller Card

The SCSI controller card provided with Coolscan, shown in Figure 3.10, is designed for the IBM-type computer standard ISA 8-bit slot. This card can be configured such that it can operate with any PC-compatible computer.

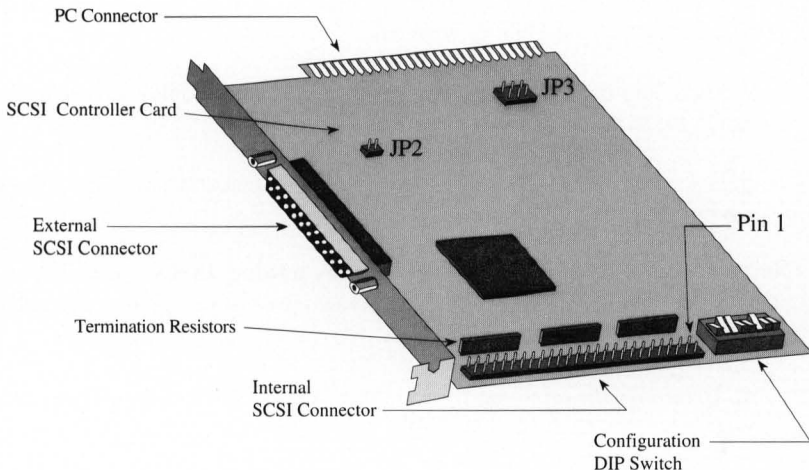


Figure 3.10 The SCSI controller card provided with Coolscan.

The card's internal and external SCSI connectors and *configuration block* are shown in Figure 3.11.

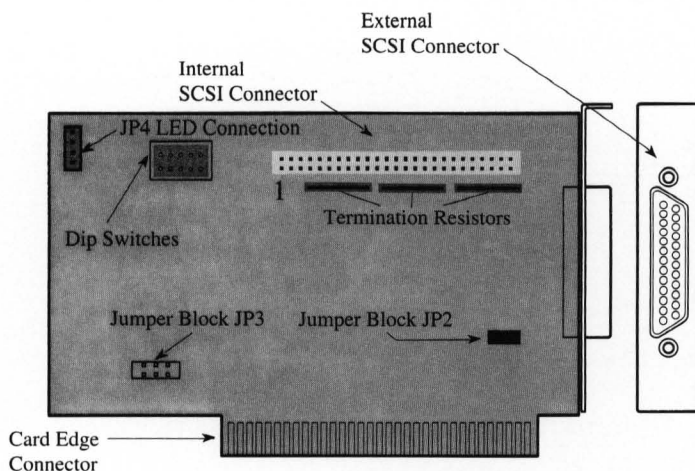


Figure 3.11 The installation-relevant components of the SCSI controller card provided with Coolscan.



Do not attempt to insert this card into a microchannel bus slot. If you need a microchannel bus card, the T-228 is the equivalent to the T-130.

The card provided is completely compatible with Coolscan and should be easy to install. If however, you are uncomfortable handling computer components, we recommend enlisting the services of a qualified computer service technician.

For most installations, the factory default settings will not have to be changed, therefore requiring no changing of the card's DIP switches.

The card has two SCSI connectors, as shown in Figure 3.11. The dual in-line connector, labeled "J1," is used to connect the LS-10, while the 25-pin DB25 connector on the rear panel of the card is used to connect the LS-10E.

Setting the SCSI Controller Card Configuration

The DIP switches, shown in Figure 3.11 are used to set the *I/O address* for the SCSI host card.

<u>I/O Address</u>	<u>SW1</u>	<u>SW2</u>
350h	OFF	OFF
340h	OFF	ON
250h	ON	OFF
240h	ON	ON

Table 3.3 The SCSI controller card's configuration block switch settings.

Please note the following, regarding the SCSI controller card configuration:

- A single 8k address range beginning at the address selected is used.
- Switches 3-4-5 control the BIOS ROM address.
- No BIOS is included with this interface card.
- Switch 6 controls boot disk operation. This is not applicable with Coolscan.
- Switch 7 and 8 should remain OFF at all times.
- JP2 controls the Zero wait state operation.
- JP3 controls the optional interrupt selection. As shipped, the SCSI controller card does not require any interrupt setting. If you have a conflict with another interface card or software you should assign an unused interrupt to the SCSI card. The available interrupts are IRQ3, IRQ5 and IRQ7. The jumper settings are printed on the SCSI card.
- JP4 provides a connection for an external LED indicator (not included) to indicate SCSI bus activity. If for some reason Coolscan is not visible to you while scanning, you may wish to connect an additional activity LED to the top two pins.

Installing the SCSI Controller Card Into the Computer

Installing the SCSI controller card is not difficult, but requires some manual dexterity. Usually the only tool required is a Phillips head screwdriver. Following is a step-by-step procedure for installing the SCSI controller card.

Step 1. Power off the computer and unplug its AC power connector.

If an uninterruptable power supply is in use, follow the manufacturer's instructions for disconnecting this power supply from the computer.

Step 2. Remove the cover of the computer.

Follow the manufacturer's instructions for removing the cover. Typically, the cover can be removed after loosening screws on the sides and/or rear panels of the computer chassis.

Step 3. Locate an unused expansion card slot.

The SCSI controller card is a half-length card requiring an 8-bit ISA card slot. The typical ISA computer is equipped with either 8-bit, 16-bit, or EISA connectors. The SCSI controller card will fit into any of these connectors, as shown in Figure 3.12. The card only requires a single 8-bit connector card slot. Consequently, it is the simplest card to interface to the computer. It is designed to fit into either a single-connector 8-bit slot or a double-connector 16-bit slot. In this case, it does not couple to the second connector.

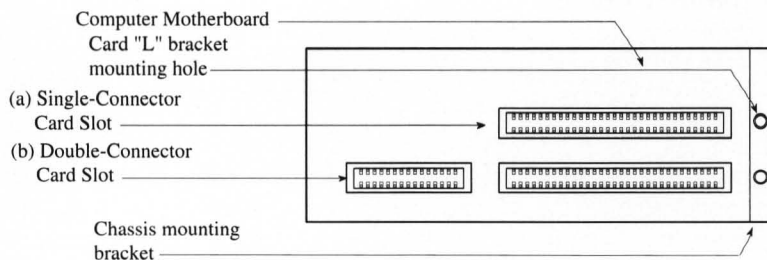


Figure 3.12 The expansion card slots on the computer's motherboard. (a) An 8-bit single-connector slot. (b) A 16-bit double-connector slot.

Step 4. Remove the lock down screw.

Remove the lock down screw and slot cover plate at the back of the computer associated with the selected card. Save this screw. It is used to lock down the SCSI controller card.

Step 5. Insert the SCSI controller card into the selected slot.

Carefully insert the card into the selected slot, making sure it is properly oriented (the component side of the card should face the same direction as the other cards in the computer) and aligned with the connector on the motherboard. The metal bracket should be flush with the back of the computer, with the external SCSI connector protruding out of the back of the computer.

Step 6. Tighten the lock down screw.

Re-insert the lock down screw removed in Step 4. The hole in the metal bracket should align with the tapped hole at the back of the computer. If not, gently pressure the card until it does. If it still does not align, confirm that you have correctly inserted the card.

Tighten the lock down screw. Care should be taken not to drop the screw into the computer as it can be difficult to remove.



Never leave a dropped screw inside the computer.

Step 7. Re-install the computer cover.

At this point, the SCSI controller card should be ready to go.

If you are installing an LS-10, please proceed to the section "Setting Up the SCSI Chain – LS-10."

Setting Up the SCSI Chain – LS-10E

The LS-10E can reside at any position in the SCSI chain. The two 50-pin connectors on the rear of Coolscan are both used for this purpose. There are essentially two possible SCSI chain configurations, the *two SCSI devices* configuration, and the *multiple SCSI devices* configuration.

Connecting Two SCSI Devices

In the simplest case, only two devices share the SCSI chain – the SCSI *host* and the SCSI *target* device. In our case, the SCSI host is the PC and the SCSI target device is the scanner. This simple configuration is shown in Figure 3.13.

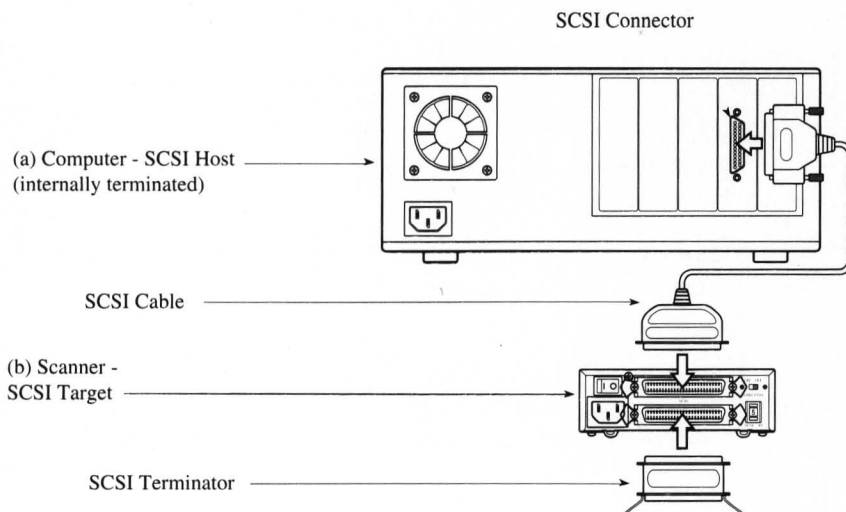


Figure 3.13 Two SCSI devices on the SCSI bus. (a) The PC is the SCSI host. (b) Coolscan is the SCSI target device.

Procedure (Use the SCSI cable supplied with Coolscan):

1. Make sure that the PC is powered off.
2. Connect the DB25-pin side of the cable to the PC's SCSI connector (on the back of the PC).
3. Connect the Centronics 50-pin side of the cable to the top SCSI connector on the back of Coolscan. This cable will connect Coolscan to the PC's SCSI bus.

4. Connect a SCSI connector to the bottom SCSI connector on the back of Coolscan, since this is the end of the SCSI chain.

In this case, both the SCSI host side of the bus and the SCSI target device side of the bus must be terminated, as shown in Figure 3.13.

Connecting Multiple SCSI Devices

In many cases, more than one SCSI target device will be connected to the SCSI bus. When this is true, a series of SCSI cables must 'daisy chain' each device together, even though the devices will usually only communicate directly with the PC, not with each other. In this example, Coolscan is placed at the end of the SCSI chain. This daisy chain configuration, as shown in Figure 3.14, minimizes the number of cables and connectors required.

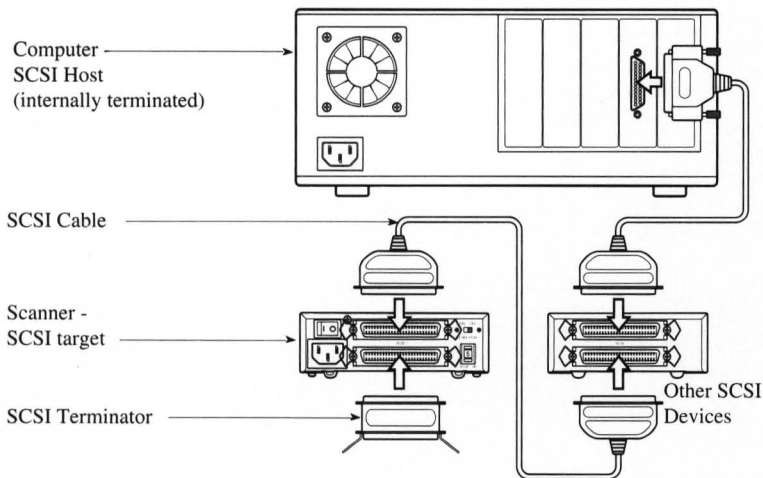


Figure 3.14 Daisy chaining SCSI devices. Coolscan is shown at the end of the chain.

Procedure (using a Centronics 50-pin to Centronics 50-pin SCSI cable – not supplied):

1. Make sure that the PC and all other SCSI devices are powered off.
2. Remove the SCSI terminator from the last device in the SCSI chain.

3. Insert one end of the unused SCSI cable into the top SCSI connector on the back of Coolscan.
4. Connect the other end of the unused SCSI cable to the free SCSI connector of the neighboring SCSI device.
5. Connect the SCSI terminator to the bottom SCSI connector on the back of Coolscan.

It is equally possible to configure the SCSI chain with Coolscan in the center of the chain. In this case, the SCSI terminator would reside on the optional device, as opposed to Coolscan.

Please proceed to the section “Important Information About the SCSI Interface.”

Setting Up the SCSI Chain – LS-10

The LS-10 can reside at any point in the SCSI chain. There are essentially two possible SCSI chain configurations, the *two SCSI devices* configuration, and the *multiple SCSI devices* configuration.

Connecting Two SCSI Devices

In the simplest case, only two SCSI devices share the SCSI chain – the SCSI *host* and the SCSI *target* device. In our case, the SCSI host is the PC and the SCSI target device is the scanner. This simple configuration is shown in Figure 3.15.

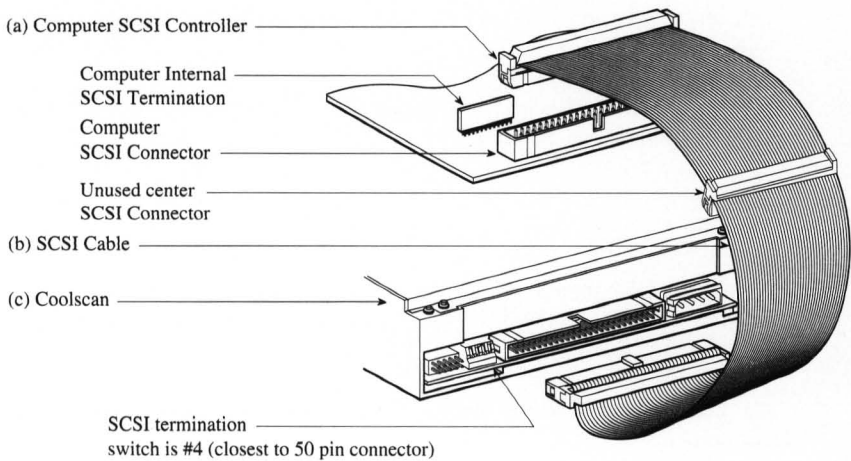


Figure 3.15 The PC's internal SCSI Bus. (a) The PC's SCSI controller card connector. (b) Internal SCSI cable. (c) Coolscan.

Procedure (use the supplied 3-connector 50-pin flat SCSI cable):

1. Make sure that the PC is powered off.
2. Connect one end of the flat SCSI cable to the PC's SCSI connector, making sure that they are properly aligned (see "Installing Coolscan Into the Drive Bay" in Chapter Four for detailed description).
3. Connect the other end of the flat SCSI cable to the SCSI connector on the back of Coolscan, making sure that the connectors are properly aligned (see "Installing Coolscan Into the Drive Bay" in Chapter Four for detailed description).

In this case, both the SCSI host side of the bus and the SCSI target device side of the bus must be terminated. Refer to the section "Terminating the SCSI Chain – LS-10" in this chapter for the proper DIP switch setting.

Connecting Multiple SCSI Devices

In many cases, more than one SCSI target device will be connected to the SCSI bus. When this is true, the chain of SCSI cables must connect or 'daisy chain' each device together, even though the devices will typically only communicate directly with the PC, not with each other. In this example, shown in Figure 3.16, Coolscan is placed at the end of the SCSI chain. This daisy chaining configuration, minimizes the number of cables and connectors required.

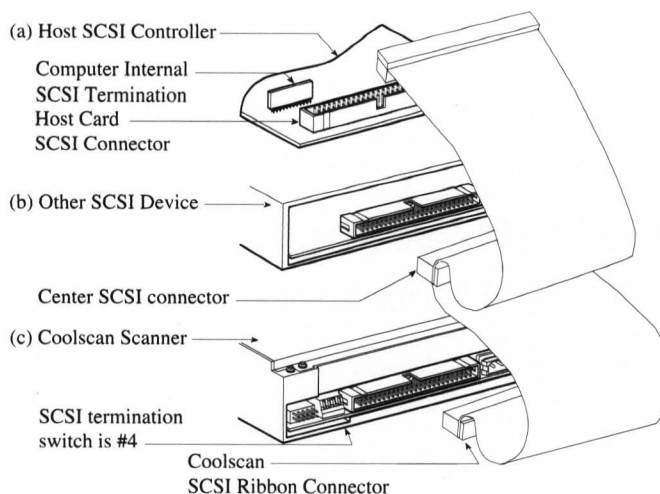


Figure 3.16 Multiple SCSI devices on the PC's SCSI bus. Coolscan is at the end of the SCSI chain.

Procedure (use the supplied 3-connector 50-pin flat SCSI cable):

1. Make sure that the PC and all other SCSI devices are powered off.
2. Remove SCSI termination from the last device in the SCSI chain.
3. Remove the SCSI cable currently in use from the PC's SCSI connector on the motherboard, and the other end from the SCSI device.
4. Connect one end of the supplied 3-connector flat SCSI cable to the SCSI connector on the PC's SCSI controller card (see "Installing Coolscan Into the Drive Bay" in Chapter Four for detailed description).
5. Connect the middle connector of the supplied SCSI cable to the SCSI connector of the neighboring, now middle SCSI device (see "Installing Coolscan Into the Drive Bay" in Chapter Four for detailed description).
6. Insert the unused end of the SCSI cable into the SCSI connector on the back of Coolscan (see "Installing Coolscan Into the Drive Bay" in Chapter Four for detailed description).
7. Since Coolscan is now at the end of the SCSI chain it must be terminated. Refer to the section "Terminating the SCSI Chain - Coolscan Internal Mode" in this

chapter for the proper DIP switch setting. Because the PC is at the other end of the chain, it also must be terminated.

It is equally possible to configure the SCSI chain with Coolscan in the center of the chain. In this case, the SCSI terminator would reside on the last device in the SCSI chain, as opposed to Coolscan.

Important Information About the SCSI Interface

There are several advantages and limitations to the SCSI interface which you should be aware of:

1. It is a standardized interface.

The SCSI-1 ASPI 3.1 interface was standardized in 1986. This has made possible the use of any single SCSI-1 standard device with any computer system that supports the SCSI-1 interface standard, such as the PC.

Advantages: • Because of the vast array of competing third-party developers, SCSI hardware is relatively inexpensive and plentiful. • SCSI-based software is well defined and widely supported.

Limitations: • Although the SCSI-1 interface itself is standardized, the computer-to-SCSI interface is not. Consequently, each SCSI controller may have its own computer interface. • Different SCSI devices cannot necessarily be controlled with the same host code. Therefore, there are times when it is best to use provided SCSI controllers for different SCSI devices instead of chaining the SCSI devices.

2. It is a multi-device interface.

As noted throughout this chapter, the SCSI interface can support up to eight independent SCSI devices, *including* the host.

Advantages: • Ability to daisy chain multiple devices off of one SCSI controller to the computer. • Allows easy system expandability.

Limitations: • Not all SCSI devices can work together on the same SCSI bus. • Some SCSI devices will not operate correctly if daisy chained in a particular order. This may require that you experiment with the order of the devices in the daisy chain. • Some SCSI devices are internally-terminated at the factory. This may require that you or a qualified technician remove this termination if the device is to be placed in the middle of a SCSI chain. • When daisy chaining many SCSI devices together, the total

length of all the SCSI cables used in the chain should not exceed 18 feet. A chain of more than 18 feet may result in lost data and 'lost' devices. • System performance can suffer as devices are added to the SCSI bus. This is related to the length of the SCSI chain. Data has a longer path to travel as more devices and cables are added to the SCSI chain, resulting in electrical instability and signal reflections. This leads to miscommunicated bytes, which must be re-sent until they are received correctly, a lengthy procedure.

3. It is a fast parallel interface.

Advantages: • The complex SCSI protocol, or 'handshaking,' is managed in hardware, allowing high speed variable size block transfers. In other words, the SCSI interface allows fast transfer of blocks of data.

Limitations: • The parallel bus limits the length of the SCSI chain, and therefore, the distance between SCSI devices.

4. SCSI devices can easily be connected, disconnected, and moved.

Advantages: • Allows portability of devices between different computers. • Allows easy relocation of devices. • Allows easy system expandability.

Disadvantages: • Connecting and disconnecting SCSI devices that reside on the same SCSI bus as the computer's bootable disk can cause loss of data or directory information, and/or damage to the SCSI devices if performed while the computer or any device is powered on.



Never connect or disconnect SCSI devices while the computer or any SCSI device is powered on.

Mounting the LS-10

This chapter covers installation of the LS-10 model *only*. Proceed to Chapter Five if you are installing an LS-10E model.

Overview

Installing the LS-10 is very easy. If however, you are uncomfortable handling computer components, it is suggested that you enlist the services of a qualified computer service technician.

Briefly, the guide rails provided with the scanner must be screwed into the two sides of the scanner. The scanner can be inserted into any available 5-1/4" half-height drive bay using the computer's drive bay rail slots. Connections to the back of the scanner include the power and the SCSI flat ribbon cable.

It is highly recommended that the SCSI cable and power cable be connected to the scanner prior to mounting it into the drive bay. Due to the tight space constraints inside the computer, it may not be possible to connect the cables to the scanner *after* it is mounted. The computer's power connector is typically easiest to connect when the scanner is partially inserted into the drive bay.

The PC's Drive Bays

Your PC must have the following in order to accommodate Coolscan:

1. An externally accessible 5-1/4" half-height drive bay
2. A standard power supply connector
3. An internally accessible SCSI bus

Coolscan can be mounted into any 5-1/4" half-height drive bay, as shown in Figure 4.1. Since operation of the scanner requires easy access to its front panel, select the most convenient available bay. Do not be concerned about access to the rear of the scanner. The rear of the scanner is used only for connection to the PC's SCSI bus and power supply.

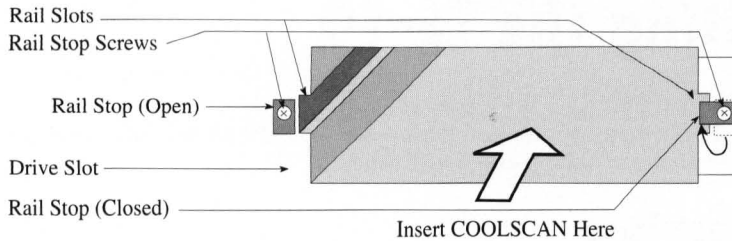


Figure 4.1 A typical PC 5-1/4" half-height drive bay, as seen from the front of the computer.

The Guide Rails

Because each computer may have special requirements for mounting devices into its drive bays, Nikon has included a versatile PC Mounting Kit. The pair of guide rails included in this kit are connected with screws to the sides of the scanner, allowing it to slide easily into the drive bay. These guide rails are also used to lock the scanner in place.

There is no strict convention regarding the mounting of devices into the drive bays. Consequently, the scanner and rails must provide a degree of installation flexibility. This flexibility is provided by the two sets of tapped holes in the sides of the scanner and two sets of elongated holes in the guide rails. You will need to select the proper holes depending on the design of your computer's drive bay.

Follow Procedure 4.1 for mounting the guide rails to the sides of Coolscan. Bear in mind, it may require several attempts to determine the best combination for optimal mounting.

Procedure 4.1 – Mounting the Guide Rails

Step 1. Power off the PC and unplug its AC power cord. Also, power off all devices connected to the PC.

Step 2. Disconnect the monitor cable connected to the back of the PC. Move the monitor safely aside.

Step 3. Place the PC on a grounded, padded anti-static surface and orient it so that you can easily remove its cover.

Step 4. Remove the PC's cover.

Following the manufacturer's instructions, remove the computer's cover, providing access to the available drive bay.

Step 5. Remove the disk drive bay cover, if present.

If present, remove the disk drive bay cover. This typically snaps out and in with gentle force. A flat-blade screwdriver may be necessary to 'pop out' the cover. The bay cover may also be screw-mounted to the same holes as the rail locking tabs.

Step 6. Loosen the locking tabs on the drive bay.

The computer's drive bay has one or two metal stops screwed into the tapped holes on the sides of each half-height drive slot, as shown in Figure 4.2b. These should be loosened to allow them to either be removed or dangle freely. This is so they do not block access to the drive bay receptacles for the guide rails. The locking tabs will be repositioned after the scanner is installed to lock the scanner in place.

Step 7. Locate the mounting holes on the sides of Coolscan.

There are two sets of tapped holes on the sides of the scanner, called the top and bottom *rail mounting holes*. One set of holes must be chosen in accordance with where the computer allows the scanner to be positioned in the drive bay. Most computers' drive bay guide rail slots align with the scanner's lower set of mounting holes.

Step 8. Locate the mounting holes on the guide rails.

The guide rails have a tapered end and a non-tapered end. The tapered end is mounted at the rear of the scanner. This facilitates the scanner's entry into the drive bay slot. The non-tapered end mounts at the front of the scanner. This flat end allows the scanner to be locked into position.

Certain holes on the guide rails are elongated in the vertical direction. This permits fine tuning of the position of the rails with respect to the scanner. The rails have a set of horizontal holes that can be used to position the rails forward or backward with respect to the scanner.

Step 9. Attach the guide rails to the sides of Coolscan.

All screws on the scanner are metric thread. Take extra care to properly align the screws into the tapped holes before applying force.

It is often easiest to 'eyeball' the optimal mounting holes on the scanner while

holding the scanner and guide rails in front of the drive bay. Choose the holes and position of the guide rails (relative to the scanner) that look best. Then, place the scanner on one side and position the guide rails so that their vertically-elongated holes align with the set of holes on the scanner which you have chosen. Using the provided screws, attach one guide rail to each side of the scanner, but do not tighten them all the way. Use the corresponding mounting holes on both sides of the scanner. Again, make sure that the beveled edge of the guide rails faces the rear of the scanner. The heads of the screws should be recessed into the guide rails when tightened. These should not protrude above the surface of the guide rails.

Step 10. Insert the scanner into the selected drive bay.

Slide the scanner into the drive bay. Check to see that its front panel is flush with the faces of adjacent devices in the drive bays, and that it does not touch the other devices. If these criteria are met, remove the scanner and tighten down the guide rail screws.



Never force the scanner into the drive bay. Be careful of sharp sheet metal in the drive bay while inserting and removing Coolscan.

If the scanner does not fit properly, go to Step 11.

Step 11. Reposition the guide rails as required.

As noted earlier, there are a myriad of PCs and PC configurations. The process of properly aligning the scanner with the computer drive bay may require several attempts and some patience. Adjust the position of the guide rails with respect to the scanner and try inserting it again. Continue fine-tuning the placement of the guide rails until the scanner fits properly into the drive bay. Make sure to tighten down the guide rail screws when you have accomplished this task.

Before Inserting Coolscan into the Drive Bay

Before inserting Coolscan into the chosen drive bay, make certain that the SCSI DIP switch #4 is set correctly for the SCSI bus configuration. If you are placing Coolscan at the end of the SCSI chain, the switch should be set to the termination ON position. Conversely, if you are placing Coolscan in the middle of the SCSI chain, the switch should be in the termination OFF position.

If Coolscan is the only SCSI device that will be on the SCSI bus, proceed to Procedure 4.2 at this time. No modification to the SCSI DIP switch on the back of Coolscan will be necessary.

If Coolscan will be placed in the middle of the SCSI chain, it will be necessary to modify the SCSI DIP switches on the back of the scanner. Refer to the section "Setting Termination on the LS-10" in Chapter Three before proceeding to Procedure 4.2.

Procedure 4.2 in the next section provides step-by-step instructions for physically installing Coolscan. Coolscan should fit snugly into the drive bay, yet it should not be necessary to apply excess force to insert the scanner. If it does not slide in easily, reposition the guide rails or visually check the drive bay to clear whatever might be blocking the path of the scanner. The most likely source of insertion jamming problems is the connector cables themselves, bunching between the rear of the scanner and the power supply.

Procedure 4.2 – Installing Coolscan into the Drive Bay



Procedure 4.1 must be successfully completed before continuing to Procedure 4.2.

Step 1. Insert Coolscan into the drive bay approximately half way.

This will facilitate connection of the power and SCSI cables.

Step 2. Connect the 50-pin SCSI flat ribbon cable to Coolscan.

Thread one end of the 50-pin SCSI cable through the drive bay and pull it through into the bay. Align the Pin 1 *keyway* of the included SCSI flat cable with Pin 1 of the scanner's SCSI connector (Note that the SCSI connectors on both the scanner and the cable are equipped with a protruding keyway tab to safeguard against incorrect

insertion). The cable's connector should be oriented so that its key and ribbed side face upwards and is parallel with the connector on the scanner, as shown in Figure 4.2.

Firmly insert the connector. It should seat with very little force. If there is strong resistance, *do not apply excess force*. Remove the connector and confirm that you are inserting it in the correct orientation.



Never force the SCSI cable connector into the scanner's SCSI connector. This can result in damage to the connector.

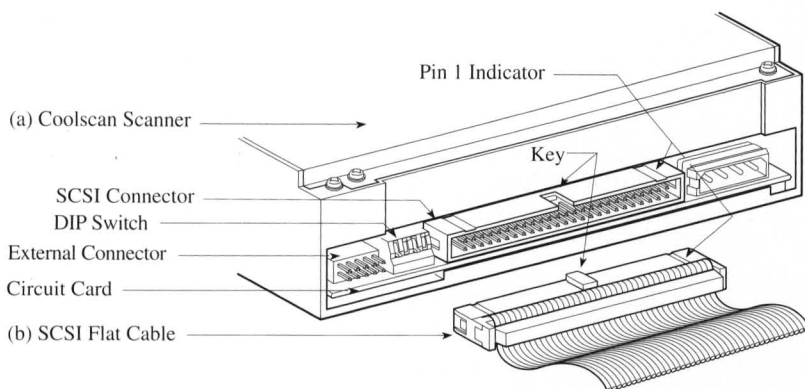


Figure 4.2 Connecting the SCSI flat cable to the Coolscan SCSI connector. (a) Rear of Coolscan Internal model. (b) SCSI flat cable showing keying and ribbed side facing upwards.

Step 3. Connect the opposite end of the 50-pin SCSI flat ribbon cable to the 50-pin SCSI connector on the SCSI controller card.

Follow the guidelines in Step 2 to insert the opposite end of the SCSI cable to the SCSI connector on the SCSI controller card.

Step 4. Connect power to Coolscan.

Shown in Figure 4.3 are different 4-pin power connectors, which are used to connect 12V DC and 5V DC power to Coolscan. An optional 4-pin Y-Adapter is provided for cases where no 4-pin power connector is available in the computer to connect to Coolscan.

Feed the computer's 4-pin power connector through the drive bay from the inside as far as it will extend into the drive bay.



Never attempt to connect power to the scanner while the computer's power is on.

Note that both ends of the power connector are keyed so that two corners are beveled. Be careful to ensure that the beveled edges of the connectors are properly aligned before completing connection to Coolscan's power connector.



Under certain circumstances, it may be possible to force the power connector in at a reverse angle, thereby creating a backwards connection. Extreme damage can occur to the scanner should this happen. Make sure that the connection is correct.

If there is no power connector available in your PC, use the provided Y-Adapter, per the instructions below:

- 1) Unplug the 4-pin power connector from the closest internal SCSI device.
- 2) Plug it into the female connector of the Y-Adapter.
- 3) Plug one of the male connectors of the Y-Adapter into the same device.
- 4) Plug the other male connector of the Y-Adapter into the Coolscan power connector.

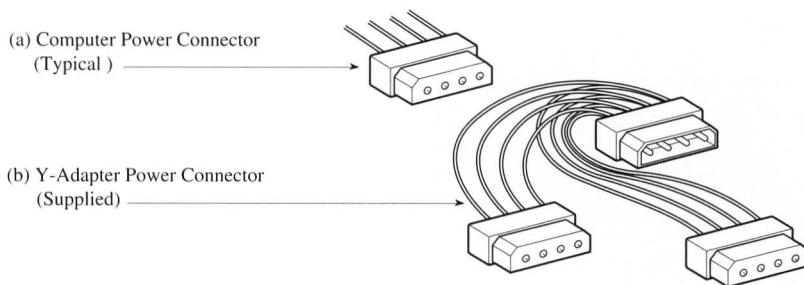


Figure 4.3 Internal power connectors. (a) Typical connector on four wire cable. (b) Optional Y-Adapter power connector provided with Coolscan.

Step 5. Slide Coolscan completely into the drive bay.

Once the power and SCSI connections are complete, carefully slide the scanner the rest of the way into the drive bay. One hand should gently pull the SCSI cable to provide a slight tension on the cable while the scanner is being pushed in. Never tug on the cable nor allow the cable to be pinched, folded or crimped.

Step 6. Secure the scanner.

Once the scanner is pushed into the computer, reposition or reinsert the lock tabs dealt with in Step 6, Procedure 4.1. The tabs should slide in front of the scanner guide rails thereby locking the scanner in place.

Step 7. Replace the computer's cover.

Replace the computer's cover *making sure not to cut, pinch or bend any internal cables.*

Step 8. Reconnect the monitor.

Step 9. Reconnect the computer's AC power cord.

Step 10. Start the PC.

Start up the PC in the usual way. Your disk drive should boot within a few seconds. If your PC does not start up as it normally does, or if Coolsan's power/busy/error LED indicator is not lit or continuously blinking, refer to the "Troubleshooting" chapter in this manual.

Software Installation

Nikon Scanner Plug-in Software

Coolscan is bundled with two scanning software programs and one utility program. The first, *Nikon Scanner plug-in* software, allows Coolscan to operate within a wide variety of Nikon and third-party software applications for the Windows operating system. The second program, *Coolscan Control* software, is a stand-alone application that makes use of the Nikon Scanner plug-in in the same way that third-party software applications do. The utility software, *Eject.EXE*, enables you to eject a slide from within the Program Manager or Windows' File Manager. All three programs are on the supplied distribution diskette *Nikon Scanning Software for Windows*, seen in Figure 5.1.



Figure 5.1 The Nikon Distribution Diskette.

The Nikon Scanner plug-in software must be used in conjunction with another software application. It is called a *plug-in* because it 'plugs in' to a number of software applications such as Nikon ImageAccess, Micrografx Picture Publisher and Adobe Photoshop/PC. The Nikon Scanner plug-in software user interface remains the same across these and most other popular imaging applications. This allows you to scan from within different applications as desired, even crossing over from the PC to the Macintosh, without having to learn a new scanner software interface. Use of the Nikon Scanner plug-in is explained in detail in the *Coolscan User's Guide for Windows*.

Coolscan Control Software

Coolscan is bundled with a stand-alone application called *Coolscan Control*. If you would rather not scan from within another application program, such as Photoshop/PC, Coolscan Control is an easy-to-use application. Use of Coolscan Control is explained in detail in the *Coolscan User's Guide for Windows*.

Eject.EXE Software

Eject.EXE is a simple software application for ejecting the slide inserted in

Coolscan. This application has no menu. It will locate Coolscan, send the EJECT FILM command, then quit.

Nikon Installer Software

By responding to a few simple prompts and providing a minimum amount of information, the *Nikon Installer* will automatically install the Nikon Scanner plug-in and/or the Coolscan Control software onto your hard drive, as requested.



Commands that are taken from the user interface in this section are shown using HELVETICA type.

System Requirements

Windows 3.0 or later must be installed on the computer before attempting to run the Nikon Installer software. The destination disk drive, the drive on which you will be loading the scanning software, must have enough disk space to accommodate the Nikon Scanner plug-in and/or Coolscan Control, and the SCSI driver. If you are planning on using the Nikon Scanner plug-in with specific third-party applications, you should have all the required disks available before continuing.

The Distribution Diskette

The Nikon software distribution diskette contains the Coolscan Control application, the ASPI driver required by the SCI controller card, and the main installation program called **SETUP.EXE**. The **SETUP.EXE** program will install Coolscan Control and/or a number of third party applications you may already own. *Make sure to make a backup copy of the Nikon Distribution Diskette before continuing.*

Running the Nikon Installer

First, insert the backup copy of the distribution diskette into an available 3-1/2 inch floppy disk drive. Please contact Nikon Technical Support at 516-547-4311 if you require 5-1/4 inch media.

The Nikon Installer software must be run from Windows. In the Windows Program Manager click the mouse on the **FILE** menu item, as shown in Figure 5.2.

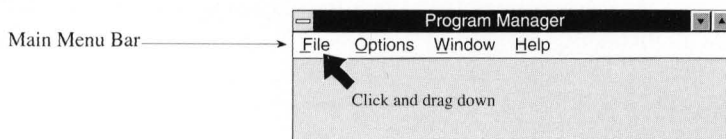


Figure 5.2 The Windows Program Manager.

The FILE drop-down menu will appear, as shown in Figure 5.3. Drag the mouse down to the RUN item and release the mouse button.

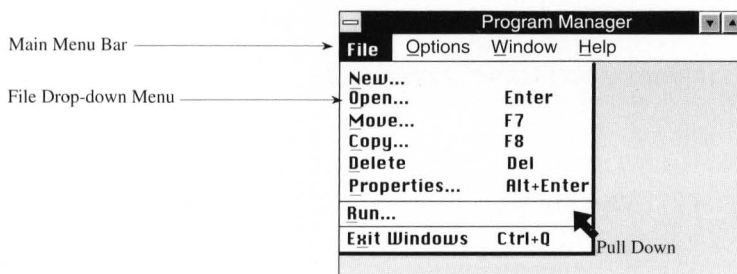


Figure 5.3 The FILE drop-down menu.

At this time the RUN dialog will be displayed, prompting you to enter the path to the Nikon Installer. The Nikon Installer program is named **SETUP.EXE**. If the Nikon distribution diskette is in the 'A' drive, enter **A:\SETUP.EXE** into the file name dialog, then click the **OK** button. This is illustrated in Figure 5.4.

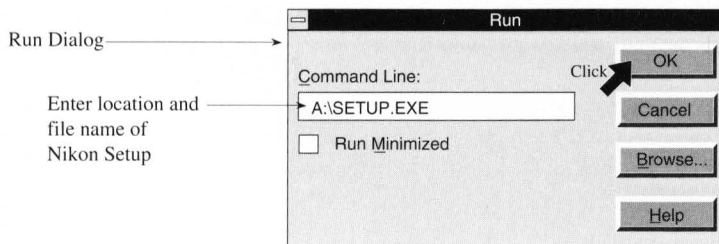


Figure 5.4 Windows' RUN dialog.

You will be prompted to answer a series of basic questions, after which the Nikon Installer will automatically install the designated scanning software.

You can access help at any stage of the installation by clicking on the **HELP** but-

ton. Similarly, you can exit the Nikon Installer at any time by clicking on the **EXIT** button.

To complete the software installation, simply select from the options available in each dialog, which are explained fully in the following sections.

The Software Installer Dialog

The first dialog that appears after you launch the **SETUP.EXE** program is the **NIKON SCANNER SOFTWARE SETUP** dialog, seen in Figure 5.5. The Installer is decompressing the scanner software files on the floppy disk and copying them to a temporary file on your hard disk. This will take a few moments to complete.

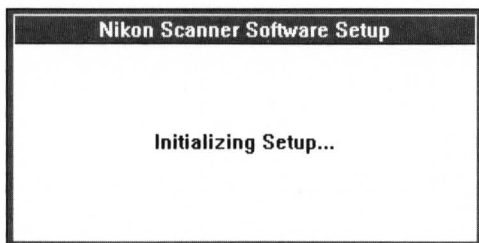


Figure 5.5 The **NIKON SCANNER SOFTWARE SETUP** dialog.

At the conclusion of the setup operation, the **NIKON SCANNER SOFTWARE INSTALLER** dialog will appear, as shown in Figure 5.6.

If you want to continue with the installation, click the **CONTINUE** button. If you don't want to continue with the installation, click the **EXIT** button. Clicking the **HELP** button will provide you with basic information about the current step in the installation procedure.



Figure 5.6 The NIKON SCANNER SOFTWARE INSTALLER dialog.

The Product Selection Dialog

The PRODUCT SELECTION dialog, seen in Figure 5.7, is used to indicate which Nikon product is being installed. The default selection is Coolscan, so just click on the CONTINUE button to proceed.

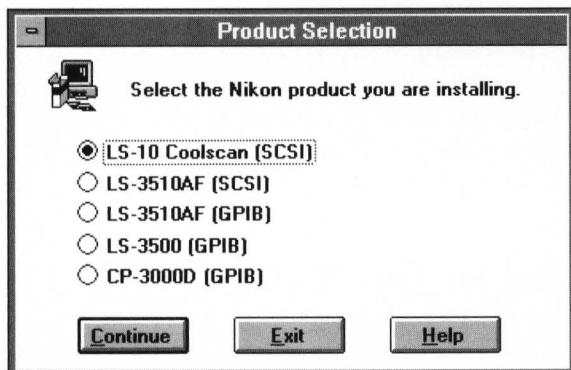


Figure 5.7 The PRODUCT SELECTION dialog.

The Installation Options Dialog

The next step entails selecting the application software which you want to 'host,' or control the Nikon Scanner plug-in software. Use of the Nikon Scanner plug-in requires a host application.

Select the host application through the INSTALLATION OPTIONS dialog, shown in Figure 5.8. The function of this dialog is to tell the Nikon Installer which application you will be using to access Coolscan.



Figure 5.8 The INSTALLATION OPTIONS dialog.

The default selection is Coolscan Control. If you select any of the other listed software products, refer to the section "Installing Third-Party Applications" in this chapter.

The Path Selection for Files Dialog

The Installer software must be informed as to where you want the scanning software installed. This is accomplished by entering the 'logical disk' and path into the PATH SELECTION FOR FILES dialog, as shown in Figure 5.9, then clicking CONTINUE. The default path for Coolscan Control is C:\NIKON.

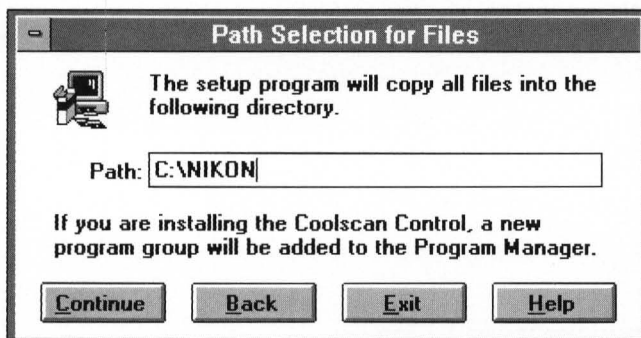


Figure 5.9 The PATH SELECTION FOR FILES dialog.

If you want to install the Nikon Coolscan Control software as the host application, click CONTINUE. This will invoke the SCSI DEVICE DRIVER OPTIONS dialog, as seen in Figure 5.10.

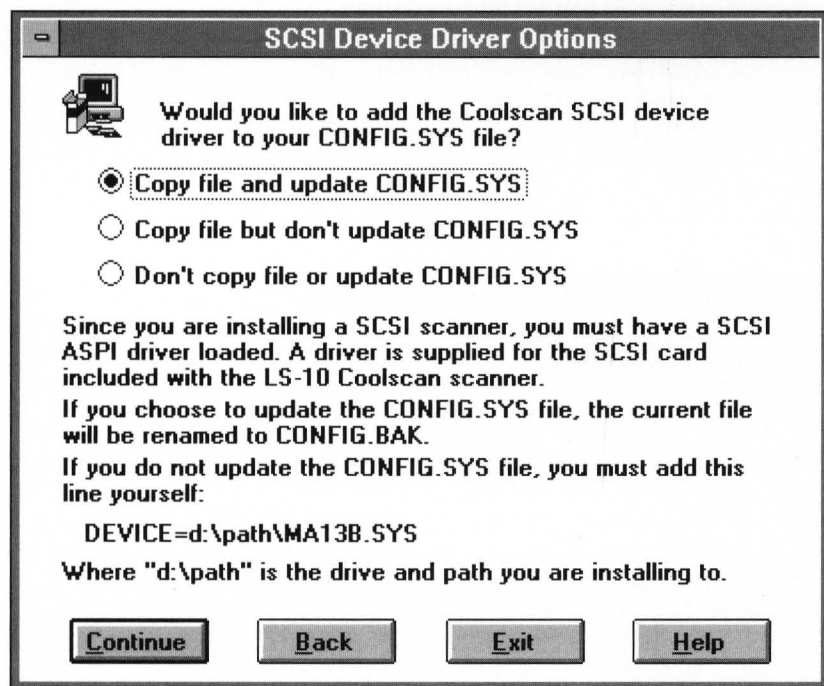


Figure 5.10 The SCSI DEVICE DRIVER OPTIONS dialog.

When using Coolscan with the included SCSI controller card, select the **COPY FILE AND UPDATE CONFIG.SYS** selection. Expert level users, who are familiar with the structure of the Config.SYS file, may choose one of the other options.



Improperly editing the Config.SYS file may cause your system to operate improperly.

After you click on **CONTINUE**, each file is copied to your hard disk. The **NIKON SETUP** Progress Indicator, seen in Figure 5.11, will report the percentage of the installation completed.

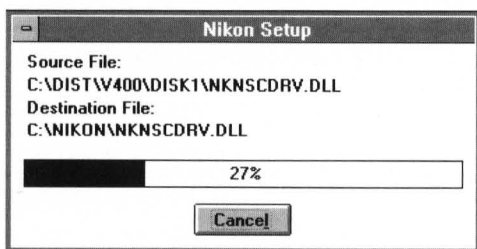


Figure 5.11 The NIKON SETUP Progress Indicator.

At the conclusion of the Coolscan Control installation you will be prompted to create a **PROGRAM MANAGER GROUP FOR NIKON COOLSCAN CONTROL**, as seen in Figure 5.12. The Program Manager group allows you to quickly launch application software by double-clicking on an icon, instead of typing a path in the **RUN** dialog in the Program Manager, or having to locate the program in the Windows File Manager.

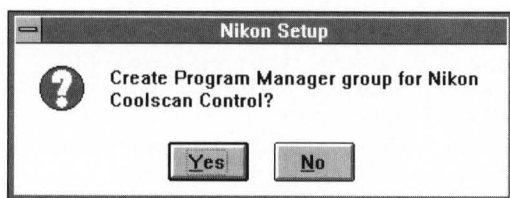


Figure 5.12 The NIKON SETUP dialog.

After you create the Program Manager group you will see the **SETUP SUCCEEDED** dialog. This dialog also serves as a reminder to fill out your Warranty Registration Card in order to receive future software updates and other information from Nikon.



Figure 5.13 The SETUP SUCCEEDED dialog.

Congratulations! You have successfully installed the Coolscan Control software. If you wish to install the Nikon Scanner plug-in software for use with a third party application, please proceed to the next section.

Installing Third-Party Applications

The Path Selection for Installer Dialog

If you are using one of the listed third-party software applications in the INSTALLER OPTIONS dialog, the Nikon Installer needs to know where you want the Nikon plug-in software to reside. This is accomplished by entering the destination disk and path into the PATH SELECTION FOR INSTALLER dialog, shown in Figure 5.14. The Nikon Installer will do its best to anticipate where you want the files to go, based on your host application selection. This path information will automatically appear in the PATH text box. If this path is correct, click on CONTINUE. If it is incorrect, correct the path entry, then click on CONTINUE.

If necessary, you can revert to the PATH SELECTION FOR INSTALLER dialog by clicking on BACK.

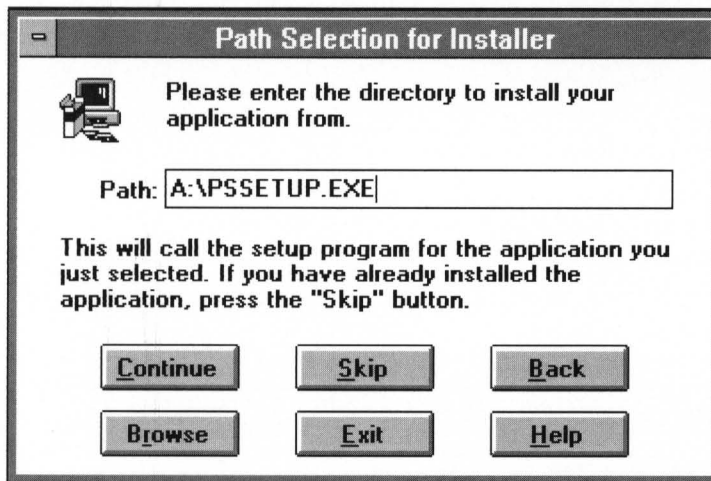


Figure 5.14 The PATH SELECTION FOR INSTALLER dialog.

The Installation Method Dialog

At this time, you need to inform the Nikon Installer whether you will be installing new host application software and the plug-in onto the destination disk, or updating an already installed host application and only loading the plug-in onto the destination disk. This is accomplished via the INSTALLATION METHOD dialog, shown in Figure 5.15.

If you are installing new host application software, click the **NEW INSTALLATION** radio button, then click **CONTINUE**. If you are updating a previously installed host application, click the **UPDATING A CURRENT INSTALLATION** radio button, then click on **CONTINUE**.



Figure 5.15 The INSTALLATION METHOD dialog.

If you are installing new host application software, you will be required to supply the path of its installation software. At this time, you should insert your host application distribution disks, if they aren't already loaded, into the appropriate floppy drive and follow the third-party vendor's installation instructions. The path of the host application installation software is entered through the **PATH SELECTION FOR INSTALLER** dialog, shown in Figure 5.14.

Upon completion of the third-party application software installation, you will be required to enter the destination path for the Nikon Scanner plug-in. This is accomplished by entering the path into the **PATH SELECTION FOR FILES** dialog, as seen in Figure 5.9, then clicking **CONTINUE**.

If you are only updating previously installed application software, the same requirement applies, i.e. enter the destination path for the Nikon Scanner plug-in. Again, this is accomplished by entering the path into the **PATH SELECTION FOR FILES** dialog, as seen in Figure 5.9, then clicking **CONTINUE**.

Installing the SCSI Driver Software

Coolscan is interfaced to the computer through the SCSI bus. It is necessary to load the *SCSI driver* software into the computer's memory in order to access the scanner. This is typically accomplished by adding a **DEVICE** statement in the computer's **CONFIG.SYS** file.

The Nikon Installer can automatically update the current **CONFIG.SYS** file for you via the **SCSI DEVICE DRIVER OPTIONS** dialog, seen in Figure 5.10. This is the recommended procedure for novice users.

The dialog contains three options. The first is **COPY FILE AND UPDATE CONFIG.SYS**. If you select this option and click **CONTINUE**, the Coolscan SCSI device driver will be added to your current **CONFIG.SYS** file, which will then be renamed **CONFIG.BAK**. The following line will automatically be entered into the **CONFIG.SYS** file:

```
DEVICE=D:\PATH\MA13B.SYS
```

Alternatively, you can modify the **CONFIG.SYS** file yourself. In this case, select the **COPY FILE BUT DON'T UPDATE CONFIG.SYS** radio button, then click **CONTINUE**. If you select this option, you must manually enter the following line into your **CONFIG.SYS** file:

```
DEVICE=D:\PATH\MA13B.SYS
```

The last option in this dialog, **DON'T COPY FILE OR UPDATE CONFIG.SYS** should only be selected when you do not want to complete this operation.

If you are attempting to use Coolscan with a third-party SCSI controller card you should consider the advantages of running your scanner and hard disk from isolated buses. There are a wide variety of SCSI controller cards on the market, but not every card can supply the SCSI functionality required to run your scanner. The required ASPI driver software is often an additional cost. To assure reliable operation, we have included a Trantor T-130 SCSI controller card and ASPI software with your scanner. For microchannel use, the Trantor T-228 has been certified for use with Coolscan by Nikon (this card is *not* included with Coolscan). Only select **COPY FILE AND UPDATE CONFIG.SYS** if you are using the Trantor T-130 SCSI controller card.

Conclusion

Congratulations! You have successfully completed installation of your Coolscan scanner and software. This concludes the main body of this manual. The “Troubleshooting” section contains detailed information on how to diagnose and correct any type of technical problem which may arise in conjunction with Coolscan. Please proceed to the *Coolscan User’s Guide for Windows* for instruction on usage of the Coolscan scanning software.

Troubleshooting

Following are some common problems you may encounter in the installation of your scanner. Corrective action for each problem is listed by order of most likely cause. If a corrective action does not solve the problem, proceed to the next listed corrective action. If the problem persists after exhausting all of the suggested corrective actions, contact Nikon Technical Support at (516) 547-4311 for assistance.

Problem: The Nikon Software Installer reports that it cannot read my third-party application disks during the installation, but when I run the third-party installer outside of the Nikon Installer the disks are read with no problem.

Action: This problem is due to an error in reading different density media. We advise you to install your third-party software first, then update the scan drivers with the Nikon Installer disk.

Problem: My system won't boot after I install the Coolscan SCSI controller card.

Action: You have an interrupt conflict. Refer to the section on setting the SCSI card configuration, which will direct you on how to assign one of three possible interrupts to your SCSI host card. You may have a conflict with a video card driver, or a driver from another installed hardware device. The Coolscan SCSI controller card will run in a large number of PCs with no change in settings required. Please contact Nikon Technical Support if you are unable to resolve the problem.

Problem: When I launch Microsoft Windows I am returned to the "C:" prompt.

Action: Windows may not be properly installed. Try launching Windows with the following command: "Win/s." If Windows runs in standard mode, you should reinstall it, as well as your other drivers. Also, make sure your system is properly configured to use the 386 enhanced mode.

Problem: I've installed the Nikon Scanner Drivers in my Aldus PhotoStyler and now I can't use my other scanner.

Action: PhotoStyler can only support one scanner driver at a time. If you have sufficient disk space, create a duplicate of the PhotoStyler directory. Then, set up one copy for Coolscan and use the other copy for your other scanner.

Problem: My scanner cannot be found by the Nikon Scanner Driver.

Action: Check the messages displayed on your screen as your system is first starting up. Pay particular attention to the Trantor ASPI driver. It should indicate the SCSI ID and type of device as it is loading. In the unlikely event that Coolscan has not completed the power-up diagnostics, you may need to reboot your system so that Coolscan is recognized. Please Contact Nikon Technical Support if this occurs.

Action: Check that you have all cables firmly attached to Coolscan.

For *LS-10E* units, it is advised to fasten the connector's wire clips in order to firmly attach the SCSI cable and terminator to the back of Coolscan. SCSI cables will sometimes 'walk' away from the connector, leaving the impression that the cable is firmly seated, while in fact, it is not.

For *LS-10* units, make certain that the SCSI ribbon cable has not been punctured or crushed when you reinstalled your PC's case. Assure that the SCSI ribbon cable is firmly seated at both ends. Check the position of the configuration switch for termination "ON," as indicated in Figure 3.4 in Chapter Three.

Problem: Scanning is very slow.

Action: Coolscan will provide the best possible performance if enough RAM is available to contain the entire scan. Eight megabytes of RAM will yield reasonable performance. The host application (e.g. Coolscan Control, Picture Publisher or Photoshop) starts to use virtual memory when there is no more RAM available. In this case, you will notice an increase in disk activity and a decrease in overall scanning speed.

Problem: My SCSI hard disk is unreliable since I installed Coolscan.

Action: You should be interfacing Coolscan with the included SCSI controller card. Nikon cannot guarantee compatibility with every ASPI-compliant SCSI controller card and hard disk driver software. You will not see any speed increase by using a different SCSI controller card, as the included SCSI card can receive image data faster than Coolscan can generate it.

Problem: I get a system error when I'm scanning.

Action: Make note of the exact error message that appears, then contact Nikon Technical Support. It will help if you have the following file information in front of you before you call:

Contents of:
Config.sys
Autoexec.bat
Win.Ini



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EID-CIW-393
Product #29984